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Fall 2009

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“It’s Time To Check The Nets” Research and Conservation of Rafinesque Big-eared Bats in East Texas

By Christopher E. Comer

"It's time to check the nets" says Leigh Stuemke, Stephen F. Austin State University (SFASU) graduate student and bat researcher. Dutifully, the four biologists present hitch up our chest waders, turn on our headlamps and stomp off into the East Texas night. Mylea Bayless from Bat Conservation International (BCI) in Austin is the first to arrive with her spotlight at the stagnant pond about 75 meters from the truck. "Nothing in this net", she calls from out of the darkness. I play my headlamp over the 6-foot-tall, 12-foot-wide stretch of fine nylon mesh in front of me. A tiny furry ball is visible struggling in the net about a foot from the water's surface. "Hey, we got one. Looks like a Seminole bat". I am referring to *Lasiurus seminolus*, one of the more common bats resident in this densely forested part of the state. Then we can hear the excitement in Leigh's voice, "We've got a CORA! No two CORAs". She is referring to our target species, the far less common *Corynorhinus rafinesquii* or Rafinesque's big-eared bat. Fifteen minutes later we meet back at the vehicle with Laurie Lomas, the U.S. Fish and Wildlife Service biologist responsible for the Trinity River National Wildlife Refuge where we are working, to examine our catch.

Rafinesque's big-eared bats are both uncommon and difficult to catch, so it is rare to handle more than one caught in mist nets on one evening. We are cheating a bit—a group of 50 or more bats roosts regularly in a nearby abandoned home. Before the night is over, we have captured 11 CORAs and one southeastern bat (*Myotis austroriparius*), a secondary target species. Though they did not appear to appreciate the honor, these bats were the first subjects for a research project examining the ecology of these poorly understood mammals in East Texas.

Of the 11 bat species native to the Pineywoods, the Rafinesque's big-eared bat and, to a lesser extent, the Southeastern bat are most vulnerable to long-term population declines. These species' are closely associated with mature bottomland hardwood forest because of their habit of establishing maternity roosts in large, hollow trees - especially black gum and tupelos (*Nyssa sylvatica* and *Nyssa aquatica*). Forest biologists estimate that over 75% of the original

bottomland hardwood forest in the southeast has been lost or degraded due to timber harvest, urbanization, reservoir construction, and conversion to pastures or other agricultural uses. Because of this loss of habitat, perceived declines in abundance, and a general lack of knowledge about its ecology, the Rafinesque's big-eared bat is protected in most southeastern states, including Texas where it is listed as threatened.

Adding to concerns about this species is our poor understanding of their ecology, habitat requirements, and distribution within their range. Thankfully, biologists have recognized the need for more information, and research projects are currently underway in several states. One of the most comprehensive is ongoing at SFASU using funds from the Texas Parks and Wildlife Department (TPWD). Along with others from across the region, the bats from Liberty County were fitted with radio transmitters allowing us to track them to their roost sites and learn about their ecology and movements. We are also surveying promising areas of bottomland hardwoods in East Texas for these bats. One is acoustic monitoring, a technique which uses specialized equipment to identify the unique echolocation calls bats make to navigate and locate insect prey in the dark. Another survey method is simply sticking our heads into hollow trees and searching for bats. Data suggest sparse but stable populations of both bat species in east Texas.

In response to concerns about the long-term future of these bottomland hardwood bats, BCI and the Southeastern Bat Diversity Network are currently preparing a comprehensive conservation and management plan for Rafinesque's big-eared bats and southeastern myotis. The most important conservation measure for these and many other East Texas species is conservation and wise management of large tracts of bottomland hardwood forest. The bottoms associated with the major rivers of the region, particularly the Angelina, Neches, Sabine, and Trinity Rivers as well as the Cypress Basin, are critical to the future of Rafinesque's big-eared bats. In areas where there are few large trees suitable for roosts or these trees have been lost, the bats will roost in manmade structures such as houses, bridges, and culverts. Of 20 known roosts in the state, half are in structures of some kind. Several are in old homes or buildings that are abandoned and deteriorating. These roosts need to be preserved through strengthening the existing structures or providing alternative roost sites. BCI has developed a successful tower design for these bats, with several currently in use across the southeast, including at the Trinity River NWR.

Bottomland hardwood forests of East Texas support a unique and diverse wildlife community that has declined significantly in the last 100 years. In addition to bats, wildlife of these bottomlands include other rare or declining mammals such as Louisiana black bears, prothonotary and Swainson's warblers, timber (canebreak) rattlesnakes and others. Persistence of these species is reliant upon wise use and conservation of these resources. Next time you are fortunate enough to spend a summer evening in one of our remaining bottomland forests, keep your eye out for bats.

Dr. Comer is a professor at Stephen F. Austin State University in Nacogdoches where he oversees research on the Rafinesque Big-eared Bat.